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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MARCHESCHI, MICHAEL A	

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1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/501,044	TANK, KLAUS	
	Examiner	Art Unit	
	Michael A. Marcheschi	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *7/8/04* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

In view of applicants brief, the finality of the office action dated 7/28/08 is withdrawn, however, the following new non final rejections are being applied in view of (1) new art, (2) a more complete explanation of the references applied and how they relate to the claimed invention and/or (3) the reapplication of at least one rejection inadvertently withdrawn previous but after further review of the claim language, is reapplied.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(1) Claims 1-3 and 5-13 are rejected under 35 U.S.C. 102(a) as anticipated by or in the alternative under 35 U.S.C. 103(a) as being obvious over Fang et al. (564).

Fang et al. teaches in section [0031]-[0036], [0047], [0059]-[0060] and examples 1-3, a method for producing a tool component comprising (1) providing a plurality of fibers, each fiber having a core (hard phase material, such as PCD, cBN or cermet materials (i.e. WC-Co)) and a shell (can be the same material as the hard phase–see section [0030], such as PCD, PCBN or cermet materials (i.e. WC-Co)), (2) producing bundles of the fibers, (3) extruding (4) severing (cutting) the bundles, (5) attaching the cut bundles, in the green state, to a substrate (cemented carbide (cermet) substrate as is conventionally used (see section [0003])) and (6) and consolidating (attaching to the substrate) the material by hot isostatic pressing (broadly reads on elevated temperature and pressure since the claims do not defined otherwise). A temporary organic binder (wax) is also used to manufacture the core (in order to bind the components together). Section [0028] defines that the core/shell arrangement can be of two or more materials

phases and that the phrases can be formed from different material or the same materials utilizing different sizes or proportions (this implies one or more layers). Figure 2 shows that the structure is a honeycomb shape. It is also to be noted that the reference states that the hard phase can be PCD, PCBN *and the like*.

The claimed invention is anticipated by the reference because the reference teaches a method which involves all of the claimed steps and utilizes the same components therein. With respect to the "cystallographically stable" limitation, it is the examiners position that the hot isostatic pressing, which broadly reads on elevated temperature and pressure since the claims do not defined otherwise, inherently results in this. In addition, the skilled practitioner would never operate in a region where the hard particles (diamond, etc.) are unstable. This would be apparent because (1) the instant claims only define the use of ultra hard abrasive particles and this, as broadly interpreted, reads on "PCD or "PCBN" and the claims does not specify that the particles are in a pre polycrystalline state, (2) as defined above, step 5 of the instant claims reads on hot isostatic pressing since no clear temperatures or pressures are defined and (3), if PCD, PCBN are used, during the temperature/pressure step of the reference, the materials will still be "cystallographically stable". In view of the above, the reference teachings anticipate the claims as broadly written.

In the alterative, although sections [0036] and [0047] define the claimed method but not specifically with the use of the claimed material (i.e. mixture of carbide/binder), the reference does state that the binder phase can be a cermet (i.e. this is a mixture of carbide particles and a binder), thus the concept of using this material, as the binder phase, in the teachings of the reference as depicted in section [0036] is obvious and well within the scope of the skiled artisan.

With respect to the hard particles used and the limitations of instant step 5, these would be apparent because (1) the instant claims only define the use of ultra hard abrasive particles and this, as broadly interpreted, reads on "PCD or "PCBN" and the claims does not specify that the particles are in a pre polycrystalline state, (2) as defined above, step 5 of the instant claims reads on hot isostatic pressing since no clear temperatures or pressures are defined and (3), if PCD or PCBN are used, during the temperature/pressure step of the reference, these materials will still be "cystallographically stable". In view of the above, the reference teachings reads on the claims as broadly written.

With respect to the hard particles of claim 3, the claimed hard particles are met because (1) the instant claim only states that diamond is used and this is broadly encompassed by PCD, since this claim makes no clear distinction otherwise.

In the above rejection, it is to be noted that the use of WC-Co, as depicted by the reference broadly reads on a carbide/binder metal mixture since the claims, as written to do not distinguish from this.

(2) Claim 4 is rejected under 35 U.S.C. 103(a) as obvious over Fang et al. (564) as applied above in view of Keshavan.

With respect to claim 4, it is to be noted that the primary reference utilizes a cermet (i.e. carbide, such as WC with a metal binder) and although this reference does not literally state that a temporary binder is used, the concept of applying the cermet as a mixture of (a) carbide particles, (b) a temporary binder and (c) a binder metal would have been obvious motivated by the fact that cermet materials are known to be made in this exact manner as claimed, as is clearly

shown by Keshavan in the abstract (i.e. the hard facing of the reference is a cermet). In Keshavan, once the precursor mixture to the hard facing is heat treated, a cermet is formed and thus it is the examiners position that one skilled in the art from reading the primary reference in conjunction with the secondary reference would have found it obvious to use precursors for cermets in place of the as formed cermet material in the coating defined by the primary reference.

The following rejections **(3)** and **(4)** are alternative rejections to rejections **(1) and (2)** above:

(3) Claims 1-3 and 5-13 are rejected under 35 U.S.C. 103(a) as obvious over Fang et al. (564) in view of Siracki (318).

It is to be noted that Fang et al. states that the hard phase can be as PCD, PCBN *and the like*.

Siracki et al. teaches in column 10, lines 47-49 that in addition to PCD, natural or synthetic diamond (i.e. this is non PCD) can also be used in a similar process as the hard abrasive particles.

With this in mind, Fang et al. states that the particles can be PCD, PCBN *or the like* and the limitation "the like" would suggest and thus make it obvious to the skilled artisan that regular (not polycrystalline) diamond or boron nitride can be used and these would be unsintered particles. The motivation for this is apparent in the teachings of the secondary reference in which it is stated that the hard particles used in a similar process are known to be either PCD or natural

or synthetic diamond (i.e. this is non PCD). The substitution of one known hard particle for another that is used for the same purpose is clearly within the scope of the skilled artisan absent specific reasoning as why one skiled in the art would not or could not use other known hard particles as that in the teachings of Fang et al.

With the above being obvious, the primary reference fails to literally teach how the composite is attached to the cemented carbide substrate (i.e. by HT/HP step to render the diamond "cystallographically stable"). The utilization of a high temperature/high pressure technique would have been appreciated and therefore obvious to the skilled artisan in view of the Siracki et al. teaching in column 14, lines 45-48 that composites (column 12, line 65-column 13, line 13, which are the same as the composites disclosed by Fang et al. in terms of the structure) are known to be attached (bonded) to a cemented carbide substrate (column 13, lines 27-29) by a high temperature/high pressure process. It is the examiners position that one skilled in the art would clearly understand that if a non PCD diamond is initially used, the processing of the composite must include one in which the diamond will become cystallographically stable because the skilled practitioner would never operate in a region where the hard particles (diamond, etc.) are unstable. With respect to the "cystallographically stable" limitation, the use of a high temperature/high pressure process results in this. A clear prima facie case of obvious has been established and now burden is shifted to applicants to establish clear evidence as why one skilled in the art when using non PCD as the hard abrasive material as outlined above (which by the way is prima facie obvious itself) would never or could never under any circumstance be motivated to apply a HT/HP technique to render the diamond cystallographically stable.

In the above rejection, it is to be noted that the use of WC-Co, as depicted by the reference broadly reads on a carbide/binder metal mixture since the claims, as written to do not distinguish from this.

(4) Claim 4 is rejected under 35 U.S.C. 103(a) as obvious over Fang et al. (564) in view of Siracki (318) as applied above and further in view of Keshavan.

With respect to claim 4, it is to be noted that the primary reference utilizes a cermet (i.e. carbide, such as WC with a metal binder) and although this reference does not literally state that a temporary binder is used, the concept of applying the cermet as a mixture of (a) carbide particles, (b) a temporary binder and (c) a binder metal would have been obvious motivated by the fact that cermet materials are known to be made in this exact manner as claimed, as is clearly shown by Keshavan in the abstract (i.e. the hard facing of the reference is a cermet). In Keshavan, once the precursor mixture to the hard facing is heat treated, a cermet is formed and thus it is the examiners position that one skilled in the art from reading the applied references in conjunction with Keshavan would have found it obvious to use precursors for cermets in place of the as formed cermet material in the coating defined by the primary reference.

(5) Claims 1-3, 5-7 and 10-12 are rejected under 35 U.S.C. 103(a) as being obvious over Siracki (318).

Siracki teaches in column 12, line 65-column 13, line 13, a method for producing a tool component comprising (1) providing a plurality of fibers, each fiber having a core (hard particle, such as PCD as literally depicted in this section) and a shell (such as a metal binder as literally

depicted in this section), (2) producing bundles of the fibers, (3) extruding and (4) severing (cutting) the bundles. After these above processing steps, this section further states that the layers, which are tapes, can be used to manufacture the inserts of the above described process (this clearly would imply that in order to manufacture the inserts of the reference, the tapes are further processed in a manner consistent with what the reference teaches in column 12, lines 5-19). Column 12, lines 5-19 defines further processing of how the tapes are made into the inserts of the reference and these further steps include (1) placing the layer of the tape in contact with a substrate (cemented carbide) and (2) subjecting the assembly to a HT/HP application.

In view of the above teachings, it can be readily seen that the combination of column 12, line 65-column 13, line 13 with Column 12, lines 5-19 defines a process which entails (1) providing a plurality of fibers, each fiber having a core (hard particle, such as PCD as literally depicted in this section) and a shell (such as a metal binder as literally depicted in this section), (2) producing bundles of the fibers, (3) extruding, (4) severing (cutting) the bundles to form a layer (i.e. tape), (5) placing the layer of the tape in contact with a substrate (cemented carbide) and (6) subjecting the assembly to a HT/HP application.

The reference goes on to further state that (1) the hard particles can be PCD or natural or synthetic diamond (i.e. this is non PCD)-column 10, lines 47-49, (2) the binder can be metals or cermet materials-column 12, lines 62-63, (3) a temporary organic binder (wax) is also used to manufacture the core (in order to binder the components together)-column 11, lines 25-29, and (4) figure 11A shows that the structure is a honeycomb shape. With respect to the "cystallographically stable" limitation, the use of a high temperature high pressure process results in this.

Although the teachings in the combination of column 12, line 65-column 13, line 13 with Column 12, lines 5-19 defines the claimed method but not specifically with the use of the claimed material (i.e. mixture of carbide/binder), the reference does state that (1) the binder phase can be a cermet (i.e. this is a mixture of carbide particles and a binder) and that (2) the hard particles can be PCD or natural or synthetic diamond (i.e. this is non PCD), thus the concept of using these materials, as the binder phase and hard particles, respectively, in the teachings of the reference as depicted in column 12, line 65-column 13, line 13 is obvious and well within the scope of the skiled artisan absent specific evidence otherwise.

In the above rejection, it is to be noted that the use of WC-Co, as depicted by the reference broadly reads on a carbide/binder metal mixture since the claims, as written to do not distinguish from this.

(6) Claim 4 is rejected under 35 U.S.C. 103(a) as obvious Siracki (318) as applied above and further in view of Keshavan.

With respect to claim 4, it is to be noted that the primary reference utilizes a cermet (i.e. carbide, such as WC with a metal binder) and although this reference does not literally state that a temporary binder is used, the concept of applying the cermet as a mixture of (a) carbide particles, (b) a temporary binder and (c) a binder metal would have been obvious motivated by the fact that cermet materials are known to be made in this exact manner as claimed, as is clearly shown by Keshavan in the abstract (i.e. the hard facing of the reference is a cermet). In Keshavan, once the precursor mixture to the hard facing is heat treated, a cermet is formed and thus it is the examiners position that one skilled in the art from reading the primary reference in

conjunction with the secondary reference would have found it obvious to use precursors for cermets in place of the as formed cermet material in the coating defined by the primary reference.

(7) Claims 8-9 and 13 are rejected under 35 U.S.C. 103(a) as being obvious over Siracki (318) as applied above and further in view of Fang et al. (564).

With respect to claims 8-9, the concept of using multiple coating layers would have been obvious motivated by the fact that Fang et al. teaches in section [0028] that when making these types of composites, it is generally known to define the core/shell arrangement as that being made up of two or more material phases and that the phases can be formed from different material or the same materials utilizing different sizes or proportions (this implies one or more layers). The motivation to accomplish this would be to render a desired hardness and/or ductility to the resulting compact depending on the desired used thereof. Burden is now shifted to applicants to show explicit reasons why one skilled in the art would not or could not under any circumstance use multiple coating layers in the composite of the primary reference, as motivated by the secondary reference.

With respect to claim 13, although the primary reference does not literally depict the construction of claim 13 (i.e. re-arrangement of materials used in the core and shell), the concept of making the composites according to the primary reference with a re-arrangement of the core and shell materials would have been obvious motivated by the fact that the secondary reference teaches that in these composites (which are similar to the composites of the primary reference in terms of structure and materials used), the materials used in the core (hard phase material which

can be a diamond or BN material or cermet materials (i.e. WC-Co)) and in the shell (can be the same material as the hard phase–see section [0030], such as PCD, PCBN or cermet materials (i.e. WC-Co)) can be re-arranged (i.e. the core and shell can be the same or different materials as depicted by this reference). In view of this, the secondary reference motivates one skilled in the art to re-arrange the materials used in the core and shell of the primary reference and burden is now shifted to applicants to show explicit reasons why one skilled in the art would not or could not under any circumstance re-arrange the materials used in the core and shell of the primary reference, as motivated by the secondary reference.

Applicant's arguments filed 3/6/07 (arguments as to the Fang rejection which was withdrawn by the examiner and now reinstated above) and 11/14/08 (brief) have been fully considered but they are not persuasive.

The examiner will only respond to any arguments that would be pertinent to the above rejections at hand.

Applicants argue that Fang does not teach hard materials in the pre polycrystalline state. This is noted, however, no persuasive for the instant claims because the instant claims only define the use of ultra hard abrasive particles and this, as broadly interpreted, reads on "PCD or "PCBN" and the claims does not specify that the particles are in a pre polycrystalline state.

Applicants also argue that fang does not use a HT/HP. This is not persuasive for the instant claims because, as clearly defined in the rejection, step 5 of the instant claims reads on hot isostatic pressing since no clear temperatures or pressures are defined and if PCD, PCBN are

used, during the temperature/pressure step of the reference, the materials will still be "cystallographically stable".

Applicants would appear to be arguing the pressure and temperature defined in the specification, however, these are not claimed, thus arguments against limitations not claimed are not persuasive.

The other arguments presented by applicants are not persuasive due to the new rejections above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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